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Appln. No. 09/484,363	)
First Named Applicant: TRACY E. HAMBLET, JR.	)
Filed: 1/18/2000	)
For: METHOD FOR STABILIZING SOIL AGAINST EROSION	)
	)
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Examiner: C. Novosad	)

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Sir:

INFORMATION DISCLOSURE DECLARATION OF TRACY HAMBLET, JR.

1. I, Tracy Hamblet, Jr., state that I am the inventor of the subject matter disclosed in the subject patent application and defined in the claims of the above-identified patent application. I am the President of Turf & Erosion Solutions based in Rapid City, South Dakota, a company which has specialized in the stabilization of soils against erosion and the establishment of turf for over ten years.

2. In the latter half of the 1990's, as a part of my work establishing turf in various locations, I began looking for a way to stabilize newly placed or graded soil, like that which is found on a new golf course, housing development or land reclamation project, that could hold the soil in place at least until turf or a bed of grass could be established to hold the soil in place. A common technique employed for soil stabilization at that time was placement of fibrous

mats on the surface of the soil to physically resist or block the movement of the soil particles from the location of original placement of the soil. As noted in Background of my patent application, the mats were expensive to use, especially over large areas, were not completely effective, and needed to be removed once turf was established. Further, as the size of the area of land that needed to be protected from erosion increased, the use of the mats became less and less practical.

3. Around that time, I became aware of the polyacrylamide polymer (hereinafter referred to simply as "PAM") and I had the concept that the spray application of PAM to bare soil could provide a more effective and less costly alternative to the conventional use of the aforementioned mats, or sod, to resist erosion until turf or vegetation was sufficiently established on the soil to resist the erosive forces to which the soil was exposed. For the invention to be useful, it would have to be at least as effective as the mats in stabilizing the soil until the turf or vegetation was sufficiently established so that the turf resisted erosion of the soil. While the concept of using PAM to stabilize soil was generally known to be effective for erosion control in a manner that might be useful, several factors made the use of PAM to stabilize soils difficult, unpredictable, and generally cost prohibitive.

4. Some of these problems and concerns regarding PAM are outlined in Exhibit A, which is entitled “POLYACRYLIMIDE (PAM) A New Weapon in the Fight Against Irrigation-induced Erosion” (hereinafter referred to as the “New Weapon” article, authored by R.E. Sojka and R.D. Lentz of the USDA Agricultural Research Service in or about 1994. While the New Weapon article does discuss the use of PAM to reduce erosion, the New Weapon article is primarily directed to the reduction of erosion in the furrows of

surface irrigation, which does not involve the stabilization of surface soil over large areas or the establishment of turf in the soil. While the New Weapon article mentions the use of spray application of PAM, the article does not disclose to one who is skilled in the technology of spray application of polymers the specific requirements of the claims of my patent application.

5. With respect to the assertion in the rejection of the recent Office Action that the "application of PAM by a sprinkler is considered to include misting since some misting would always necessarily occur with irrigation", I believe that such misting, if it were to occur, would be not be effective to stabilize the soil as it would only affect a portion of the land area to be treated. More importantly, the sprinkler would predominantly produce a heavier spray along with any such “misting”. This heavier spray, particularly if it were to impact the soil prior to the application of a PAM/water mixture as a mist that was able to penetrate the soil, would likely initiate erosion of the soil, particularly if the soil was newly placed (rather than established or compacted) and/or the top surface of the soil was sloped (rather than being relatively horizontal). Further, the New Weapon article states that “PAM has also been found less effective when sprayed on in a separate application step,” which may be accurate with respect to prior attempts to spray apply a PAM/water mixture, but is not accurate with respect to spray application of a PAM/water mixture using the methods set forth in the claims of my application.

6. As basically outlined in the Background portion of my application, to my knowledge prior efforts to stabilize soil in agricultural fields using PAM had involved plowing PAM in a dry granular form into the soil at high application rates--sometimes hundreds of pounds per acre. While it is my understanding that the

soil was effectively stabilized, the application rates utilized were so high that the cost was prohibitive, and also the high application rates tended to cause a top layer of the soil to form a hard crust that would likely hamper or prevent vegetation growth. Further, the plowing of the dry form of PAM into the soil would likely limit the slope of the land one which this technique of applying the dry form of PAM could realistically be utilized.

7. Another technique known to me for applying PAM to soil was the injection of PAM into a sprinkler system of an established field of soil, but this application technique also had its limitations which are discussed in the "POLYACRYLMIDE" article of Exhibit A. For example, the application rate of the PAM to the soil would be difficult to vary to meet the requirements of different land contours. Further, this technique could not be used on land areas for which a sprinkler system was not available.

8. Generally, I was not aware of any successful spray applications of PAM to large areas of land with recently placed soil, such as would be encountered in the construction of landscaping, golf courses, sport fields, site reclamation, as well as other purposes. I believed that a number of the problematic aspects of PAM handling and usage would be magnified when utilizing PAM in the large quantities that would be necessary for effective soil stabilization over large areas of land. Also, I did not know how the application and effectiveness of PAM to land areas with a variety of soil types and compositions that are often encountered when treating relatively larger land areas, would be affected. Both of these factors are critical to the practical usefulness of PAM for stabilizing soil over large land areas against erosion.

9. More specifically, there are several factors that contribute to the difficulty of handling and application of PAM, especially in the quantities necessary for use on relatively large areas, and some of these factors are identified in my application and are repeated here for emphasis. These factors include the difficulty in handling and using PAM in the field, as the behavior of PAM in the presence of water can be extremely sensitive and unpredictable. Because of the large quantities of a PAM/water mixture that would have to be applied to a large land area, mixing of the PAM and water would have to be done close to the point of application in the field to be practical. However, under field conditions, the PAM polymer must still be thoroughly mixed with the water, and if the PAM is added to the water in the wrong manner, such as too quickly or in too great amounts, the PAM polymer (and the resulting mixture) can easily become so highly viscous that mixing and application equipment can become clogged and unusable. To my knowledge, there was no equipment at the time of my conception that was designed or intended for the spray application of a PAM/water mixture to the surface of soil, especially in large quantities, so I would have to develop new equipment or adapt existing equipment for this purpose. As a further handling challenge, the PAM polymer is very slippery in the presence of water, which only further complicates its handling especially if the PAM is spilled or otherwise splashed outside of its container.

10. Another problem associated with PAM was the possibility of applying too much PAM for the particular composition of the soil being treated. The over-application of PAM to soil can produce a hard crust on the top surface of the soil that actually hinders vegetation growth in the soil. This problem has been avoided when using the technique of applying PAM using a

sprinkler or irrigation system by injecting the PAM in relatively low amounts into the water supply of the irrigation system. However, the use of the PAM at these relatively low concentrations results in an application rate that has relatively little effectiveness for holding the soil in place against any significant erosion forces, particularly until turf or vegetation could be established. Therefore, determination of a proper application rate for the particular soil composition would critical to effective and useful spray application of a PAM/water mixture.

11. Another concern that I had about spray application of a PAM/water mixture was attempting to spray relatively large amounts of the PAM/water mixture on bare soil without initiating the erosion that the process was intended to prevent. This was a significant concern particularly on newly placed soil, such as on a recently-graded golf course where little or no compaction or settling of the soil may have occurred. The application of a significant quantity of a PAM/water mixture to the surface of the soil could easily precipitate or cause erosion of the soil during the application of the mixture. Thus, rather than desirably inhibiting erosion of the soil being treated, the application of the PAM/water mixture to the soil would undesirably precipitate erosion. This situation was a particular concern for me on areas of soil with a top surface that had anything more than a minimal slope. Thus, to avoid causing erosion during the spray application process, the concentration of the PAM in a PAM/water mixture for spray application might have to be balanced against the application rate for the PAM/water mixture, the erodability of soil being treated, the slope (if any) of the soil, and the particular amount of compaction present in the soil.

12. Much of the experimentation with PAM for soil stabilization prior to my invention of the disclosed method involved

soil on agricultural land, due to the ability of PAM to facilitate the growth of vegetation in the soil by enhancing the development of the root structure of the vegetation, by enhancing germination of seeds, and by enhancing water and nutrient retention by the soil. Generally, the soil of an agricultural field is relatively uniform in composition and character, and without significant variation in the slope contours of the land.

13. In contrast, some large land contouring projects, particularly golf course construction, involve the formation of a variety of land features or contours that are desirable for lending the golf course a distinctive character and making golf play more challenging. These land contours often produce a wide variation of slopes and curves which are especially vulnerable to wind and water erosion, many times at varying erosion rates. Further, projects such as the construction of golf courses and sports fields, as well as large scale landscaping and site reclamation, often utilize soils that are brought onto the site so that there can be a highly variable mix of soil compositions, and these varying soil compositions often exhibit different tendencies for erosion and thus need varying levels of erosion control. Initially, I did not known if the effectiveness of the PAM/water mixture would also vary between different soil types and whether I could effectively adapt the spray application of the PAM/water mixture to the different soil types.

14. While erosion control is important during the initial soil placement and grading operations on a construction project such as a golf course, it is critically important from the time that grading of the soil is finished until the time at which the turf (or other vegetation growth) is sufficiently established on the course to help hold the soil in place, such as the time at which golf play may occur on the turf without damaging the turf. During this period of time,

the soil will not only be exposed to the elements, including the possibility of heavy rainfall, but also relatively frequent watering of the grass seed. Thus, successful soil stabilization against erosion requires stabilization through the time that the turf is firmly established on the golf course and the turf is ready to be played on by golfers. This grow-in period may (and often does) include changing conditions that expose the soil to precipitation (such as rain or snow), winds, and runoff caused by rain and melting snow. Therefore, to be considered effective and useful for its purpose, the PAM/water mixture application would not only resist erosion initially, but would have to continue resisting erosion of the soil for a period of time sufficient for turf or other vegetation growth to become established on the soil from seed applied at or about the time of the PAM/water mixture application. If the PAM/water mixture application was not effective against erosion for at least this period of time, then my PAM/water spray application process would be of relatively little practical usefulness.

15. Having the concept of spray application of a PAM/water mixture, and a knowledge of the potential problems associated with PAM, I set out to develop a method for spray application of a PAM/water mixture to soil that would be effective for soil erosion control while also being practical to handle and relatively cost effective. There were a number of factors that I thought might affect the ability of the PAM application process to achieve these goals, including 1) the manner in which the PAM and water were initially mixed, and the equipment used to accomplish the mixing; 2) the manner or technique used to accomplish the spray application, 3) the application rate at which the PAM was applied to the soil, 4) the type or composition of soil to which the PAM/water mixture was applied, and 5) the contour or slope of the soil.

16. While I performed some small scale testing of my PAM/water mixture spray application at my own facilities on a relatively small patch of one type of soil, I determined that any realistic testing of the PAM application process would have to be performed on land areas having different soil types and contours, and on a much larger scale than could be accomplished in my limited facilities in order to provide real world conditions. Any realistic testing would have to be performed on bare soil on a land area that was being filled, recontoured or otherwise disturbed so as to be subject to the likelihood of erosion if not protected in some manner. These conditions could be found on sites where earthmoving and landscaping was being performed, such as, for example, on large landscaping projects and golf courses being constructed. I undertook this testing to develop my process beyond the concept that I had in mind and to determine if the soil treated in the manner that I envisioned would remain substantially uneroded until the turf or vegetation seed planted in the treated soil was sufficiently established to tolerate normal golf course usage. Also, since the effectiveness of the process could be affected by a number of factors, such as the particular composition of the soil, as well as the technique employed to apply the PAM/water mixture to the soil, and the particular slope of the top surface of the soil, a variety of these conditions (and different combinations of these conditions) might affect the ability of the process that I envisioned to effectively stabilize the soil until the turf was sufficiently established to permit the traffic of golfers on foot and in golf carts.

17. Further, since there was no equipment available that was specifically designed for applying a mixture of PAM and water to soil in the quantities that were required for large scale application in the manner that I envisioned, virtually all of the equipment that I

contemplated using for applying the PAM mixture to the soil would need to be found, and possibly modified in some way from its original condition.

18. In 1998, I began a program of developing and testing a method of PAM application under a variety of field conditions that represented a range of different soil types, surface slopes, surface contours, and environmental weather conditions that could be expected to be encountered on a golf course or other large scale soil stabilization application. The testing involved different application rates, different spray application techniques, and different types of mixing and spray application equipment. These tests were conducted on five test sites, and involved applying a PAM/water mixture to land areas of less than 20 acres, with most areas being significantly less than 20 acres.

19. The first site where aspects of the method of the invention were attempted in 1998 was in my hometown of Rapid City, South Dakota at the Chateau Ridge Subdivision construction site, on an area of approximately one acre, where the slope of the top surface of the soil ranged from 3:1 (e.g., three feet of horizontal run to one foot of vertical rise) to 1:1 (e.g., one foot of horizontal run to one foot of vertical rise), the soil composition was generally red clay, and I determined that the erodability of the soil was class 3, which is considered to be easily erodable soil. All aspects of the PAM/water mixture application were conducted by me or employees of my company under my direct supervision. After the PAM/water mixture was applied to the soil, I periodically returned to the site to monitor the condition of the soil for signs of erosion for a period of time until the turf was established to a degree that erosion was unlikely to occur. Eventually, after that period of turf establishment, it appeared that the process was suitable for

stabilizing the particular red clay soil composition and degree of soil erodability present on the particular surface slopes encountered at that site.

20. The next site where aspects of the claimed method of the invention were attempted in 1998 was also in my hometown of Rapid City at the Trimac Transportation-UTI reclamation site, on an area of approximately one-half acre, where the slope of the top surface of the soil ranged from approximately 3:1 to approximately 2:1. The soil composition was generally red clay, and I determined that the erodability of the soil was class 3, which is considered to be easily erodable soil. In contrast to the Chateau Ridge site, this site involved roadside open earth cuts that had previously experienced significant erosion problems and that needed to be stabilized until vegetation was sufficiently established to hold the soil in place on the open earth cuts. All aspects of the PAM and water application were conducted by me. After the PAM/water mixture was applied to the soil, I periodically monitored the condition of the soil at the site for erosion for a period of time until the ground cover was established to a degree that erosion was unlikely to occur. Eventually, after that period required for grow in of the cover vegetation, it appeared that the process was suitable for stabilizing the soil of the particular composition and erodability present for the particular surface slopes encountered.

21. The next site where aspects of the claimed method of the invention were attempted in 1998 was in Pierre, South Dakota at the Oahe Lodge Golf Course construction site, on a land area of approximately 19 acres, which was a much larger area than any of the prior testing sites and represented my first attempt to apply the techniques of my method to an actual golf course site. At this test site, both water and wind erosion were significant problems for

keeping the soil in place. The slope of the top surface of the soil ranged from approximately level to approximately 2:1. In contrast to the soil on the earlier two sites, the soil on this test included sandy loam and a silty native topsoil that were not present in any appreciable amounts in the soil of the earlier test sites, and was my first attempt to utilize my PAM/water application method on soil that was not primarily composed of clay. Also, I determined that the relative erodability of the soil was class 2—which is considered moderately erodable--and was different from the earlier test sites. All aspects of the PAM and water application were conducted by me. After the PAM mixture was applied to the soil, I periodically monitored the condition of the soil at the site for erosion until the turf was established to a degree that erosion was unlikely to occur. After that period, it appeared that the process was suitable for stabilizing the soil of the particular composition and erodability present for the particular surface slopes encountered.

22. Another site where some aspects of the claimed method of the invention were attempted in 1998 was in Hartville, Wyoming at a quarry reclamation site on an area of approximately 1 acre. The slope of the top surface of the soil ranged from approximately 3:1 to approximately 2:1. In contrast to the soil on the earlier test sites, the soil on this test site was primarily a sandy clay that had not been encountered in the soils located at the other test sites. At this test site, I determined that the relative erodability of the soil was class 3, which is considered easily erodable. All aspects of the PAM/water mixture application were conducted by me. After the PAM/water mixture was applied to the soil, I periodically monitored the condition of the soil and kept notes regarding any apparent erosion. During this periodic monitoring of the Hartville, WY test site after the application was completed, I discovered that erosion

of the treated soil had occurred. However, I was unsure as to the reason that the PAM/water mixture application had partially failed to prevent the erosion. I did not know if the cause was due to a factor that I could control, such as an improperly mixed batch of PAM and water or the manner in which the mixture was applied to the soil, or a factor that I could not control, such as the particular composition of the soil (which again was different from the earlier test sites) or the amount of rain that had fallen on the soil.

23. The last test site where some aspects of the claimed method of the invention were attempted in 1998 was in Blair, Nebraska at the Blair Country Club Golf Course construction site on an area of approximately 8 acres. The slope of the top surface of the soil ranged from approximately 5:1 to approximately 2.5:1. The soil on this test site was primarily a native top soil, which was different from the soil composition at any of the earlier sites in that it did not contain any clay. Significantly, I determined the relative erodability of the soil was class 4 and thus considered to be very erodable, which was the soil with the highest degree of erodibility that had been attempted to treat with my method up to that point in the testing. At this site I attempted to instruct another contractor in the use of my method of spray application of the PAM/water mixture. However, the results of the PAM/water mixture spray application at this test site did not provide the same results as the previous test sites, and did not produce acceptable erosion resistance. Because of the number of variables involved (which have been outlined above), and in view of the fact that I did not observe the actual application of the PAM/water mixture to the soil, I was not able to identify the factor or condition that led to the poor performance of the PAM/water mixture at the Blair, Nebraska test site. I had a suspicion that the failure was due in part to the

difference between the soil composition at this test site and the soil compositions encountered at the previous test sites, as the soil at this site did not include clay but the soils at the earlier test sites did include clay. I believed at the time that the lack of any appreciable amount of clay in the soil caused the problems with the resistance to erosion, but I could not be sure of this without further testing on soils that also did not contain any clay. However, I realized that the results might also have been negatively affected by problems in handling and applying the PAM/water mixture, and might have been unrelated to the soil composition.

24. When it became apparent during one of my inspections of the test site in Blair, Nebraska that the application was failing, I attempted to stabilize the soil by tilling a dry form of the PAM polymer into the soil, and then spraying the PAM/water mixture onto the soil mixed with the dry polymer, and this modified approach was successful in stabilizing the soil against erosion. At this point in the testing, I was unsure whether application of the PAM/water mixture according to the method of my invention would effectively stabilize any soils with compositions that did not include any appreciable amount of clay.

25. As a result of the initial failure of the application of the PAM/water mixture at the Blair, Nebraska site using spray application techniques alone, I decided that I needed to continue testing of the spray application method on different soil compositions in order to determine on what types of soils my spray application of the PAM/water mixture worked, and on what types (if any) of soils my spray application of the PAM/water mixture would not work, as this could be a critical limitation upon the usefulness of my invention. This further testing occurred after the critical date of January 18, 1999, and continued well into 1999.

26. The further testing in 1999 included a test site at Sheboygan, Wisconsin at the Whistling Straits Golf Course construction site, where approximately 90 acres were treated, and which was the largest land area on which I had attempted to apply my invention up to that time. The slope of the top surface of the soil ranged from approximately 3:1 to 1:1, and the soil composition on this site was not uniform, and varied considerably due to the fact that virtually all of the soil that was being treated by my PAM/water mixture application method had been trucked onto the site from other locations to contour the land from a relatively flat corn field to a highly contoured and sloped golf course. As a result, the different soil compositions included clay, a native topsoil, and sand of a very fine, wind-blown character and was laced with organic material, and the compositions varied from area to area. This test site thus provided me with the greatest range of different soil compositions that I had yet worked with in the testing. This test site also included soils with the greatest range of erosion characteristics, ranging from class 2 (moderately erodable) to class 4 (very erodable). My testing at this site began after final grading on 21 of the 36 holes had been completed using conventional erosion control techniques. Evidence of erosion on the previously completed holes was significant, even at the early time when I arrived at the site to apply the PAM/water mixture to other holes of the course.

27. Initially I experienced very mixed results at the Whistling Straits golf course, which I believed to be the result of the significant variation in the soil compositions on this single, although sprawling, test site, and the absence of clay in some of the soils. While the application of the PAM/water mixture to soil having a composition that included at least some clay appeared to

produce acceptable erosion resistance, there was one particular area of the test site where the soil did not include any clay. When I began spraying the PAM/water mixture onto the soil in the manner that I had in the previous tests at the previous sites, the soil began to immediately erode as a result of my spray application of the PAM/water mixture. So, not only was the PAM/water mixture spray application not able to prevent erosion of the soil, the application of the mixture was actually causing erosion of the soil. It was only at this point in the testing that I began attempting to experiment with the technique or manner of applying the PAM/water mixture to the soil, and to deviate from the application techniques that I had used since the first test sites. It was at this time that I first employed the use of a light mist of the mixture to produce an initial "tack coat" on the soil surface to allow only very gradual penetration of the mixture into the soil. The use of this initial misting application of the mixture, with relatively heavier and more penetrating subsequent applications, did not cause the erosion of soil lacking clay that I had experienced prior to the use of the misting application. Significantly, application of the PAM/water mixture using this technique secured the soil against subsequent later erosion without the use of the dry form of the polymer, which I had resorted to at previous test sites when the spray application of the PAM/water mixture did not appear to be effective (for example, for soils with no appreciable clay content).

28. After the PAM mixture was applied to the soil, I periodically monitored the condition of the soil at the site for erosion until the turf was established to a degree that erosion was unlikely to occur. In the period after the PAM and water mixture was applied, the conditions monitored included the effect of a significant rainfall on the site of about 1.5 inches in a 24 hour

period, which did not appear to cause any significant erosion on the areas treated by my process. Further, the condition of the soil during the seasonal change was monitored over the subsequent year period, and it was noted that a significant amount of snow fall, and subsequent rapid snow melt over a short period of time, did not significantly erode the soil that had been treated according to my process.

29. Testing at different sites continued through 1999 and into 2000, as the process of the invention was applied to different types of soil compositions, including a test site with soil having a mixture of sandy loam with sandy clay, a test site with a mixture of very sandy soil and clay, and different erodibility characteristics. The testing at the Whistling Straits test site, which was further confirmed by further testing at different test sites with different soil compositions thereafter, led me to realize that, contrary to my initial belief, the composition of the soil was not as much of a factor in the success or failure of my PAM/water mixture spray application process than was the technique with which the spray application was performed. The further development of my spray application technique led me to change the manner in which I performed the process in at least three ways. The first aspect was the use of the aforementioned application of the initial misting application or tack coat, along with the graduated the amounts of PAM applied in the PAM/water mixture, which I had not utilized previous to the Whistling Straits job in 1999. Secondly, I significantly decreased the concentration of the PAM in the PAM/water mixture that I utilized prior to the Whistling Straits job, to the concentration levels that are set forth in the disclosure of my patent application. This decrease in the PAM concentration in the PAM/water mixture, and the corresponding increase in the amount

of water utilized to achieve the overall PAM application rates, was counter to my prior belief that the amount of water utilized in the spray application should be decreased so as to avoid causing erosion as a result of applying large amounts of water to erodable soil. Finally, I was able to effectively apply the PAM/water mixture to more types of soil and increased surface slopes than previously using combinations of the tack coat application technique and the decreased PAM concentrations in the PAM/water mixture over a greater number of mixture applications.

30. In each of the jobs described in ¶¶19 through 23, my company was primarily contracted to seed the soil to establish turf on the soil at these locations, a service for which I was paid. In each of these cases, the services also included using my technique to stabilize the soil prior to seeding the soil. Due to the relatively small size of my company, the significant expense involved in the cost of the PAM polymer (approximately $600.00 per 30 gallon drum), the significant amount of equipment involved, the cost of fuel for the equipment, the cost of my employees' labor, and, in many cases, the cost of moving the equipment and personnel to distant test sites, the acceptance of some payment for the seeding and stabilization services that were performed at the test sites partially defrayed, but not meet, the expenses involved with the stabilization work. To attempt my soil stabilization process on these various sites without any remuneration of the expenses would have prevented me from conducting meaningful tests on soils having different compositions and contours. More specifically, for the Chateau Ridge Subdivision project discussed in ¶19 above, my company received $900.00 for the seeding and stabilization services. For the Trimac Transportation-UTI reclamation project discussed in ¶20 above, my company received $350.00 for the

seeding and stabilization services. For the Oahe Lodge Golf Course construction project discussed in ¶21 above, my company received $7000.00 for the seeding and stabilization services. For the quarry reclamation project in Hartville, Wyoming discussed in ¶22 above, my company received $300.00 for the seeding and stabilization services. For the Blair Country Club Golf Course project in Blair, Nebraska discussed in ¶23 above, my company received $2500.00 for the seeding and stabilization services.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made oh information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF DECLARANT: TRACY E. HAMBLET, JR.

Declarant's Signature Date: 7-6-2010